

What is Claimed is:

- [c1] A mask, wherein said mask comprises:
- a substrate;
 - a cooling layer on said substrate; and
 - a planarizing layer on said cooling layer.
- [c2] The mask of claim 1, wherein said substrate structure material comprises a coefficient of thermal expansion less than 1 parts per billion per degree Celsius.
- [c3] The mask of claim 1, wherein said substrate structure material comprises a coefficient of thermal expansion between the range of 1 parts per million per degree Celsius and 5 parts per billion per degree Celsius.
- [c4] The mask of claim 1, wherein said mask comprises an extreme ultraviolet mask.
- [c5] The mask of claim 1, wherein said cooling layer comprises a thermoelectric module.
- [c6] The mask of claim 1, wherein said cooling layer comprises semiconductor pellets.
- [c7] The mask of claim 4, wherein said semiconductor pellets comprise p-type pellets and n-type pellets.
- [c8] The mask of claim 1, wherein said cooling layer comprises a thermoelectric cooler.
- [c9] The mask of claim 1, wherein said planarizing layer has height variations not exceeding 50 nm.
- [c10] The mask of claim 1, where said planarizing layer supports an extreme ultraviolet multilayer reflector.
- [c11] The mask of claim 1, where said planarizing layer supports a mask absorber.
- [c12] A mask blank comprising:
- a substrate having at least one cooling channel; and
 - a cooling fluid within said cooling channel.

- [c13] The mask blank of claim 12, wherein said cooling fluid comprises water.
- [c14] The mask blank of claim 12, wherein said substrate comprises a low expansion ceramic.
- [c15] The mask blank of claim 12, wherein said cooling channel has a cross section diameter of less than approximately 1 micron.
- [c16] The mask blank of claim 12, wherein said cooling channel has a cross section diameter of up to approximately 1 mm.
- [c17] The mask blank of claim 12, further comprising a cover material covering said cooling channel.
- [c18] A method of making a mask blank, said method comprising:
forming at least one cooling channel in a mask substrate; and
enclosing said channels with a cover material.
- [c19] The method of claim 18, wherein said forming of said cooling channel comprises direct machining of said mask substrate.
- [c20] The method of claim 18, wherein said forming of said cooling channel comprises sintering said mask substrate.